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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,022	06/26/2003	Joshua I. Goldberg	67010-069;H2614-DC	5570
26096	7590	08/27/2004	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			NATALINI, JEFF WILLIAM	
			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/607,022	GOLDBERG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeff Natalini	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 8, 11, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lardiere, Jr et al. (5790026).

In regard to claims 1 and 8, Lardiere, Jr et al. discloses an airfoil assembly for controlling temperature (col 5 line 59-63) comprising: a component body having at least one surface (fig 2 (22); col 5 line 61-63); a resistive heating element (col 9 line 6-19, the sensor element corresponds to the resistive heating element as claimed because a current is run through it to provide heat); a controller that controls the powering/function of the heating element ((fig 2 (28); col 9 line 10-13); a plurality of detectors associated to detect portions of the heating element (col 6 line 36-39 and col 6 line 47-50; fig 4 (38 and 38a)), providing the controller with resistance information of the corresponding portions such that the controller recognizes a temperature based upon the resistance information (col 9 line 10-13).

In regard to claims 2, 3, 12, and 13, Lardiere, Jr et al. discloses wherein the resistive heater element comprises a material having a high coefficient of resistance wherein that material is nickel alloy (col 4 line 49-63).

In regard to claim 11, Lardiere, Jr et al. discloses wherein the resistive heater is laminated to the surface (fig 1 shows resistive heater (sensor (18)) laminated to surface (16)).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 5, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardiere, Jr et al. (5790026).

In regard to claims 4 and 14, Lardiere, Jr et al. discloses, wherein the resistive heater element comprises an elongated conductive wire (fig 4, wire forming 38 and 38a) and the controller determine a voltage drop in the sensor, for determining the resistance information (col 7 line 55-61).

Lardiere, Jr et al. lacks specifically having voltage detection leads placed at selected intervals along the length of the wire.

Lardiere, Jr et al. teaches using monitor or comparator units to measure the voltage drop, it would be known the comparator units could be detection leads at spaced intervals in to detect a voltage drop.

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Lardiere, Jr et al. to specifically use detection leads at spaced intervals in order to properly detect a voltage drop.

In regard to claims 5 and 15, Lardiere, Jr et al. comprises wherein the conductive wire is a nickel alloy material (col 4 line 49-63).

In regard to claim 18, Lardiere, Jr et al. discloses a method of controlling a resistive heater element on an aircraft (col 9 line 1-16) comprising; supplying power to the resistive heater element (col 9 line 10-15; fig 2 (28)); determining a resistance of the heater element and using the resistance to determine a temperature (col 8 line 54-59); determining whether the temperature of at least one of the portions is outside of an acceptable range (col 8 line 59-62).

Lardiere, Jr et al. lacks where resistance and temperature of specific portions of the resistive heater element are determined.

Lardiere, Jr et al. teaches that multiple sensing run segments may be incorporated in the sensor element.

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Lardiere, Jr et al. to determine the resistance and therefore temperature of specific portions of the resistive heater in order to make the ice detector more effective as external weather and wind conditions can effect the sensor (temperature may not be the same throughout the sensor) (col 6 line 40-46).

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5. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardiere, Jr et al. (5790026) in view of Rutherford et al. (6330986).

In regard to claims 6 and 16, Lardiere, Jr. et al. lacks specifically stating wherein the resistive heater element comprises an etched foil layer having a high coefficient of resistance.

Rutherford et al. discloses a heater that is made of an expanded flexible graphite foil, and graphite is known in the art to have a high coefficient of resistance (abstract).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Lardiere, Jr. et al. to incorporate a resistive heater element comprising an etched foil layer of graphite as taught by Rutherford et al. in order to have a monolithic structure that is able to be shaped or layered to form different thicknesses in different areas (abstract).

6. Claims 7, 9, 10, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lardiere, Jr et al. (5790026) in view of Schellhase et al. (6227492).

In regard to claims 7, 9, 10, and 17, Lardiere, Jr et al. discloses wherein the resistive heater is laminated to the surface (fig 1 shows resistive heater (sensor (18)) laminated to surface (16)).

Lardiere, Jr et al. lacks wherein by using the resistance information the controller can determine whether a portion of the heater element has become partially separated/delaminated or is performing operations consistently and the controller provides an indication of a problem.

Schellhase et al. discloses a detection sensor that informs the controller of a malfunction, and this malfunction is detected when the resistance changes by a significant amount (if the heater is partially separated/delaminated the resistance would change and thus the malfunction would be detected). The controller will shut down that particular heat zone or will bring in a secondary heating system (col 7 line 59-65).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Lardiere, Jr et al. to incorporate using the resistance information to determine whether a portion of the heater element has become partially separated/delaminated or is performing operations consistently and providing an indication there is a problem as taught by Schellhase et al. in order to have precautions in place should the system fail (abstract).

In regard to claims 19 and 20, Lardiere, Jr et al. lacks wherein when a temperature is outside of an acceptable range, an indication is made; and determining when one of the portions of the heater has become separated based on the temperature.

Schellhase et al. discloses a detection sensor that informs the controller of when the primary heating system fails based on a malfunction for example sensing the zone not becoming heated (col 8 line 5-18). Malfunctions are detected when the resistance changes by a significant amount (if the heater is partially separated/delaminated the resistance would change and since the

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temperature corresponds to the resistance the malfunction would be detected)  
(col 7 line 59-65).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Lardiere, Jr et al. to incorporate providing an indication when a temperature is outside of an acceptable range and determining when one of the portions of the heater has become separated based on the temperature as taught by Schellhase et al. in order to have precautions in place should the system fail (abstract).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Giamati et al. (6129314) teaches an airfoil heating element which contains multiple zones of heating. Jones (4277672) teaches a temperature sensor that uses resistance to find temperature.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 571-272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



**ANJAN DEB**  
**PRIMARY EXAMINER**